

In paragraph 5 of the Office Action claim 24 is objected to as containing a minor grammatical error. Responsive thereto, Applicant has changed "herein" to --wherein-- in the claim now numbered 23; thus satisfying this ground of objection.

In paragraphs 6 and 7 of the Office Action claims 9, 11 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Responsive thereto, Applicant has deleted claims 9 and 11, and amended claim 13 to clarify the claim and make it more definite. Applicant respectfully submits that this ground of rejection has thereby been satisfied.

In paragraphs 8 and 9 of the Office Action various claims are rejected as being anticipated by Fisk '542, and in paragraphs 10 and 11 of the Office Action various other claims are rejected as being obvious in light of the teachings of Fisk '542. Because all of these rejections are based upon the teachings of Fisk '542, Applicant will treat all of these rejections by first discussing the teachings of Fisk '542 and related prior art, then discussing the significant features of the present invention, and then discussing each claim and Applicant's arguments for the allowability of the claim. Therefore, with regard to the rejections set forth in paragraphs 8, 9 and 10, 11, the Office Action states the following rejections.

In paragraphs 8 and 9 of the Office Action, claims 1, 2, 8, 9, 11, 13, 16, 19, 20, 25, 26, 30, 31, 33, 35, and 40 through 47 are rejected under 35 U.S.C. 102(e) as being anticipated by Fisk et al. (U.S. Patent No. Re. 35,542), stating:

"Fisk et al. '542 disclose a device for the trenchless replacement of in-situ pipe comprising:"
a mole (22);
a length of cable (25), said cable being engageable with said mole;
a cable pulling means including a cable pulling device (28) and a cable pulling device engagement means (40) functioning to provide a mounting structure for said cable pulling device;
wherein said cable pulling device includes a cable engagement mechanism that functions to pull said cable in a plurality of repeated cyclic pulling strokes (col. 5, lines 25 through 34);
wherein the cable pulling device is a post tensioned ram (PTR) (col. 5, lines 25 through 31);
wherein the pipe is composed of a fractureable material;
wherein the PTR is portable as a result of using hydraulics;
wherein the hydraulics are used to give the PTR its pulling power;
wherein said cable pulling device engagement means includes a reaction plate having an enlarged surface for disbursing a reaction force against a cable pulling force generated by said cable pulling device;

wherein said cable pulling frame is mountable to said reaction plate;
 wherein said cable pulling frame includes a plurality of frame members and a rotatable cable pulley (41) mounted to said frame members;
 wherein said frame members are disposed to provide a cable engagement path in relation to said frame;
 wherein said frame includes a plurality of leg members that are engaged at an inner end thereof to a base member, and said leg members are engaged at an outer end thereof to further frame members that engage said pulley;
 wherein said mole includes a nose portion being engageable to said cable, a tapered body portion, and a replacement pipe engagement portion, said mole further including at least one blade, said tapered body portion acting to expand said pipe for replacement thereof with a length of replacement pipe, and said blade acting to cut pipe engagement devices encountered by said mole after said pipe has been expanded by said tapered body portion (see Figs. 2 and 3);
 wherein the blade includes a relatively thin portion that is disposable within said tapered body portion of said mole and an expanded portion that projects from said tapered body portion of said mole (see Fig. 2);
 wherein a threaded bore is formed within said mole, and wherein a mole engagement fixture (26) is fixedly engaged to an end of said cable, said fixture including a threaded end portion that is threadably engageable with said threaded bore;
 further including a replacement pipe engagement sleeve member (22) for the engagement of said replacement pipe with said mole, said sleeve member being formed for the engagement of said replacement pipe with cylindrical sidewalls and an internal radially projecting wall portion having a bore formed therethrough; and
 wherein said mole is formed with a rearwardly projecting threaded portion that projects through said bore such that said sleeve may be secured to said mole.
 With respect to claims 40 through 47, the method steps recited therein are considered to be anticipated by installation and use of the device disclosed by Fisk et al. '542."

In paragraphs 10 and 11 of the Office Action, claims 3 through 7, 10, 12, 15, 17, 18, 21 through 24, 27, 28, 29, 32, 34, and 36 through 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisk et al. (U.S. Patent No. Re. 35,542), stating:

"Fisk et al. '542 disclose all of the features of the claimed invention with the exception of:
 a cable engagement mechanism functioning to engage the cable in a pulling stroke, release said cable in a recovery stroke, and engage said cable in a further pulling stroke, whereby said cable pulling device conducts a repeatable cycle of pulling and releasing of said cable;
 at least one cable engaging collet that functions to engage said cable on a pulling stroke to release said cable on a recovery stroke;
 at least one further collet engages with the cable pulling device that functions to

engage said cable on said recovery stroke and release said cable on said pulling stroke;

a cable pulling device formed with a slotted cable insertion means for the sideways insertion of said cable within said cable pulling device;

a cable pulling device used to generate a pulling force up to and over 100 tons for distances from 2 feet to over one mile, said pulling forces not being affected by cable length;

a PTR having a weight to pulling force ratio in the range of 2 pounds of weight per ton of pulling force;

an annulus member including a cable passage bore formed therethrough, the annulus including a cable pulling device holding means for releasably holding a portion of the cable pulling device therein;

frame members disposed to provide a cable mounting gap that allows the frame to be mounted to a side of said cable;

a fixture including a hex nut portion integrally formed therewith;

With respect to claim 3, while Fisk et al. '542 do not expressly disclose the operation of the cable puller, the claimed limitations are considered to be anticipated by the patented reference's express teaching of a "reciprocating cable puller."

With respect to claims 4 through 6, it would have been obvious to one of ordinary skill in the art of cable pulling at the time of invention to modify the device disclosed by Fisk et al. '542 such that it would include at least one collet for engaging the cable on each the pulling stroke and the recovery stroke, and for releasing the cable on the respective opposite stroke. The motivation would have been to include means by which tension could be applied uniform to the cable. With respect to claims 7 and 27, it would have been obvious to one of ordinary skill in the art of cable pulling at the time of invention to modify the cable pulling device with a slot for inserting the cable sideways into the same. The motivation would have been for ease of installation.

With respect to claim 10, it would have been obvious to one of ordinary skill in the art of pipe replacement at the time of invention through routine experimentation and optimization to determine an optimal pulling force for the cable pulling device. The motivation would have been to provide sufficient force to advance the device through the soil having a characteristic resistance, and to rupture the in-situ pipe.

With respect to claims 12, 24, and 32, due to Applicant's failure to disclose any critically or synergistic result attributable to the claimed inventions, they are considered to be immaterial to the patentability of the claimed invention.

With respect to claims 14, 15, 17, and 18, it would have been obvious for one of ordinary skill in the art of cable pulling at the time of invention to further modify the device shown by Fisk et al. '542 such that it would include an annulus member including a cable passage bore formed therethrough and a cable pulling device holding means. The motivation would have been to center the cable along the length of the pipe during operation.

With respect to claims 21 through 23, 28, and 29, it would have been obvious to one of ordinary skill in the art of pipe laying at the time of invention to modify the

frame shown by Fisk et al. '542 such that it would include frame members disposed to provide a cable mounting gap that allows the frame to be mounted to a side of said cable. The motivation would have been for ease of installation. With respect to claim 34, it would have been well within the ordinary level of skill for one in the art of connections at the time of invention to modify the fixture shown by Fisk et al. '542 such that it would further include a hex nut portion integrally formed therewith. The motivation would have been to effect a means for tightening the fixture within the mole. With respect to claims 36 through 39, a duplication of parts is not considered be of patentable merit. As such, Applicants' claimed invention is anticipated by the device shown by Fisk et al. '542 and in view of the above statements of obviousness."

Responsive thereto, Applicant has amended various of the rejected claims, as set forth above, and Applicant basically traverses these grounds of rejection and asserts that the claims, as amended, recite subject matter that is neither taught by nor obvious from the teachings of Fisk '542. In the following remarks, Applicant will first discuss the Fisk '542 reference and the post tensioning ram prior art described in the patent specification. The features of Applicant's device are then contrasted therewith, and the allowability of specific claims is then discussed.

The Fisk '542 patent depicts and describes the use of a rod pusher/puller device as a cable pulling device. Such rod pusher/puller devices are well known in the industry, and Applicant submits herewith Exhibits CC and CD, wherein Exhibit CC depicts several Power Ram rod pusher/puller devices, and Exhibit CD depicts a pipe bursting system from Vermeer, Inc., a leader in the industry. It is significant that the Power Ram devices (Exhibit CC) are specifically identified in column 5, line 30 of the Fisk patent.

Turning to Exhibit CC, it depicts five power ram rod pusher/puller devices, providing perspective views that augment the side view provided in Fig. 1 of the Fisk '542 patent. Significantly, it is seen in the perspective views of Exhibit CC that the rod passes through an enclosed opening formed in the face of the rod pusher/puller device; this rod insertion feature is not visible from the side view of Fig. 1 of the Fisk '542 patent. In that the rods are engaged in sections (as opposed to a continuous cable), there is no motivation for the Power Ram rod pusher/puller to modify the enclosed opening in the face of the device.

With regard to Exhibit CD, it shows that the use of rod pusher/puller devices in the trenchless industry is ongoing. However, a significant feature depicted on pages 1 and 2 of Exhibit CD is the size of the hole that must be created to install the Vermeer rod pusher/puller equipment in-line with the pipe. It is to be noted that the Fisk '542 patent shows the pipe

pusher/puller mounted out of the hole with a frame and pulley device installed within the hole; however, Fisk '542 does mention on col. 6, lines 53-61, that the rod pusher/puller can be installed in line within the hole as shown in the Vermeer information of Exhibit CD.

Significantly, where the rod pusher/puller is installed in line (Exhibit CD) there is no need for a mounting frame, such as frame 40 of Fisk '542.

A significant feature of the Fisk '542 patent is that the rod pusher/puller is converted into a cable pulling device. However, Fisk '542 provides scant description about how this conversion is accomplished. Specifically, Fisk fails to disclose how the cable end is threaded through the rod passage hole of the rod pusher/puller, and it does not describe the clamps, jaws or other mechanical devices by which the cable is grabbed on a pulling stroke, subsequently released and grabbed again, although Fisk '542 does indicate that some type of repeated, reciprocal motion is achieved, in column 5, lines 25-30. Fisk '542, also fails to describe how the cable is fed through or around the frame device 40 and the two pulleys of the frame. Furthermore, Fisk does not describe how the cable puller (converted rod pusher/puller) is engaged to the frame device 40, although it is stated in col. 6, lines 60-61 that it is "mounted atop" the frame 40.

Applicant's invention, as claimed, provides specific solutions, to various of these problems existing in the prior art, as shown in Fisk '542, and these features are next discussed with aid of Exhibit CE, which depicts the prior art post tensioning ram (PTR) device, also depicted in Fig. 9 of the Application.

A first inventive feature of Applicant's invention, as claimed in amended claim 1, is the use of a post tensioning ram (PTR) as a cable pulling device. Such a PTR is depicted in Fig. 9 of the Application and described therein, and Exhibit CE includes depictions and descriptions of a Power Team PTR device such as may be used in Applicant's invention. As can be seen from Exhibit CE, the Power Team PTR includes one pair of cable grippers (or collets), and a detachable nose piece that is slotted, such that the cable is sideways insertable into the PTR device. Such PTR devices are typically used in fabricating concrete structures where the individual cables are pulled taut by the PTR devices and a wedge, that fits within an anchor, is used to hold the cable under stressed tension. After the cable is properly stressed, it is held in place by the wedge and anchor, and the PTR device is removed and sideways inserted onto a subsequent cable for the stress tensioning of that cable. Such PTR devices are therefore used to stress tension all of the steel cables, whereupon concrete is then poured. Additionally, such PTR

devices have also been used in the bridge building industry to pull bridge cables taut to a predetermined stress.

To Applicant's knowledge, a PTR device has never been utilized in an application similar to Applicant's. That is, to pull an object (the mole) at the end of a long cable (such as 1,000 feet). The PTR uses that are known to the Applicant all include situations where one end of the cable is fixed and the PTR is engaged to the other end of the cable to apply a tensioning stress to the cable, and a separate anchor/wedge piece holds the cable under tension, and the PTR device is removed from the cable. The use of a PTR to pull a long length of cable is generally unanticipated because winches and other devices can more rapidly pull long cable lengths than a PTR. That is, a PTR's pulling stroke is less than one foot, whereupon it recycles to pull another short length. Winches and similar devices are typically used to pull long lengths of cable because they do not function by repeated pulling of short lengths. Applicant submits that the use of a PTR within Applicant's trenchless replacement system is novel, and claim 1 has been amended (with limitations of former claim 8) to specifically recite the use of a PTR.

The allowability of each of Applicant's claims is next discussed.

Claim 1 -- Claim 1 recites the use of a PTR within a trenchless system. It is basically equivalent to prior claim 8 which was rejected in paragraphs 8 and 9 of the Office Action as being anticipated by Fisk '542, stating, "wherein the cable pulling device is a post tensioned ram (PTR) (col. 5, lines 25 through 31)". Responsive thereto, Applicant reasserts its arguments set forth hereabove that the use of a PTR to pull an object, such as the mole, at the end of a long cable is non-obvious and therefore patentable. Additionally, Fisk '542 clearly does not teach the use of a PTR device, but rather a rod pusher/puller device. Furthermore the use of a PTR in a releasable engagement with a mounting frame (as set forth in amended claim 1) is likewise novel and not taught by Fisk '542.

Claim 2 -- Amended claim 2 is dependent from claim 1 and is amended to include limitations from prior claims 3, 4 and 5. It recites the use of two pairs of collets; one pair holds the cable on the pulling stroke, the other pair holds the cable on the recovery stroke. The Office Action obviousness rejection is set forth in paragraphs 9 and 10, stating:

"With respect to claims 4 through 6, it would have been obvious to one of ordinary skill in the art of cable pulling at the time of invention to modify the device disclosed by Fisk et al.'542 such that it would include at least one collet for engaging the cable on each the pulling stroke and the recovery stroke, and for

releasing the cable on the respective opposite stroke. The motivation would have been to include means by which tension could be applied uniform to the cable.”

PTRs, such as depicted in Fig. 9, and augmented with the description in Exhibit CE, utilize a single pair of collets (the jack grippers) in Exhibit CE, to grip the cable on the pulling stroke. Fisk fails to teach anything with regard to the collet gripping of the cable, thus this obviousness rejection is traversed. With regard to PTR device teachings, there is no teaching of the use of a second pair of collets to grip the cable during the recovery stroke. Applicant submits that the use of two pairs of collets is neither anticipated by nor obvious from the prior art, such that amended claim 2 is allowable.

Claims 3, 4 and 5 are deleted without prejudice.

Claim 6 -- Claim 6 is amended to be dependent from claim 2 and includes the further limitation that the second pair of collets is engaged within the cable pulling device; that is, the PTR of claim 1, as is depicted in Fig. 28. Applicant asserts that there is no teaching in the prior art of the second pair of collets being engaged within a PTR device, nor how such an engagement might be accomplished. Thus, claim 6 recites allowable subject matter.

Claim 7 -- Claim 7 is amended to be dependent from claim 6 and it recites the sideways insertion of the cable within the cable pulling device (the PTR). While sideways insertion of the cable within the PTR is known, claim 7 is dependent from claim 6 which includes the second pair of collets, such that claim 7 recites the novel feature that the cable is sideways insertable within the second pair of collets as well.

Claims 8, 9 and 10 are deleted without prejudice.

Claim 11 -- Claim 11 is amended to include limitations regarding the mole, previously set forth in claim 25. An additional limitation is that the tapered body portion of the mole acts to “initially contact, fracture and” expand the pipe. In the prior art Fisk device, and other known prior art, fins or other mole structures initially contact, or fracture, or expand the fractured pipe. In Applicant’s mole, as depicted in Figs. 19, 20 and 21, it is seen that the smooth tapered surface of the mole makes initial contact with the pipe, fractures and pipe and expands the pipe. Applicant submits that these limitations are neither taught by nor obvious from the prior art.

Claim 12 -- Claim 12 is amended to be dependent from claim 7 and it recites the weight to pulling ratio of the PTR which includes the two pairs of collets of claim 6. Applicant therefore submits that claim 12 includes allowable subject matter.

Claim 13 -- Claim 13 is dependent from claim 12 and recites the pulling power of the PTR as recited in claim 6, in the trenchless application. As such, Applicant submits that claim 13 includes allowable subject matter in that it is dependent from allowable base claims.

Claim 14 -- Claim 14 is amended to be an independent claim; it includes the use of an annulus member within the mounting frame of Applicant's device. No such annulus member, and particularly one having a cable passage bore and sideways cable insertion slot, is taught in the mounting frame of the Fisk patent or in other known prior art. In the Office Action, paragraphs 10 and 11, the obviousness rejection states:

"With respect to claims 14, 15, 17, and 18, it would have been obvious for one of ordinary skill in the art of cable pulling at the time of invention to further modify the device shown by Fisk et al. '542 such that it would include an annulus member including a cable passage bore formed therethrough and a cable pulling device holding means. The motivation would have been to center the cable along the length of the pipe during operation."

As indicated above, Applicant traverses this ground of rejection and asserts that there is no teaching in Fisk, or in other prior art of an annulus member that is engaged to the mounting frame. Applicant therefore submits that claim 14 includes allowable subject matter.

Claim 15 -- Claim 15 is dependent from claim 14 and includes further limitations in the structure of the annulus member; namely, that it includes a means for releasably holding the cable pulling device. Applicant submits that no prior art teaches such an annulus member, particularly an annulus member that releasably holds the cable pulling device, and that claim 15 therefore recites allowable subject matter.

Claim 16 -- Claim 16 is amended to be dependent from claim 14; it includes the use of a reaction plate for disbursing a reaction force generated by the cable pulling device. While the Vermeer device depicted in Exhibit CD includes a depiction of a type of plate at the exit hole, the reaction plate is not seen as being part of a cable pulling device mounting frame, and Applicant also relies on its remarks set forth hereabove with regard to the allowability of claim 14 in asserting that claim 16 recites allowable subject matter.

Claim 17 -- Claim 17 is dependent from claim 16 and it includes the use of an annulus member in association with the reaction plate for mounting the cable pulling device. Such a structure is depicted in Figs. 16, 17 and 18 of the Application. Applicant submits that claim 17,

recites subject matter that is not taught nor obvious from the prior art, and therefore includes allowable subject matter.

Claim 18 -- Claim 18 is dependent from claim 17 and it is amended to include further details of the annulus member, specifically that it includes a bore that is disposed to receive a mounting nose piece of a cable pulling device. Applicant submits that this further feature of the annulus member is not taught by nor obvious from the prior art, and Applicant submits that claim 18 includes allowable subject matter.

Claim 19 -- Claim 19 is dependent from claim 18 and it is amended to include further details with regard to the mounting of the nose piece of the cable pulling device within the annulus, particularly that the cable can be captured within the annulus member and nose piece by a 90° rotation of the nose piece relative to the annulus member. Applicant asserts that the use of such a cable pulling device mounting structure is neither taught by nor obvious from the prior art. Applicant therefore submits that claim 19 recites allowable subject matter.

Claim 20 -- Claim 20 is dependent from claim 19 and it recites further details of the cable pulling frame, including a rotatable cable pulley. Applicant notes that Fisk '542 includes a type of frame which includes a pulley. Applicant relies on its remarks set forth hereabove with regard to the allowability of claims from which claim 20 depends to assert that claim 20 recites allowable subject matter.

Claim 21 -- Claim 21 is dependent from claim 20 and recites the limitation that the frame is structured such that it can be mounted to the side of a cable. There is no teaching in Fisk '542 or other prior art with regard to such a cable side mounting feature of a cable pulling frame. Applicant therefore respectfully submits that claim 21 recites allowable subject matter.

Claim 22 -- Claim 22 is dependent from claim 20 and recites limitations with regard to the cable pulling frame; specifically, that it is sideways insertable upon the cable such that the cable wraps around the pulley. Applicant submits that no prior art teaches or renders obvious such a structure, and Applicant further relies on its remarks set forth above with regard to the allowability of claims from which claim 22 depends.

Claim 23 -- Claim 23 is dependent from claims 22 and recites further limitations that the mounting frame includes a plurality of leg members. Applicant relies on its remarks set forth hereabove with regard to allowable claims from which claim 23 depends to assert that claim 23 is likewise allowable.

Claim 24 -- Claim 24 is dependent from claim 21 and recites the further limitation that the frame members are shaped as plates. Applicant submits that recited prior art does not teach nor render obvious the use of plates as frame members. Such a frame is advantageously strong compared to frame that are composed of beam-like members. Such a plate fabricated frame is depicted in Figs. 12-15, and Figs. 30-33. Applicant also relies on its remarks set forth hereabove with regard to the allowability of claims from which claim 24 depends to assert that claim 24 recites allowable subject matter.

Claim 25 -- Claim 25 is amended to depend from independent claim 14, and it includes limitations with regard to the mole. In particular, claim 25 is further amended to include the limitation that the tapered body portion of the mole initially contacts, fractures and expands the pipe. Prior art moles utilize fins or other devices to initially contact or fracture or expand the pipe. Applicant therefore respectfully submits that claim 25 recites allowable subject matter, both as to the limitations set forth therein and in that it depends from allowable claim 14.

Claim 26 -- Claim 26 is an independent claim for the trenchless replacement device. It includes the mole, the cable, a cable pulling device and a cable pulling device engagement means which provides a mounting structure for the cable pulling device. The detailed limitations of the cable pulling device engagement means include a reaction plate and a cable pulling frame that is mountable to the reaction plate, wherein the cable pulling device is mountable to the cable pulling frame. As depicted in Exhibit CD, the Vermeer device apparently includes a reaction plate; however, the cable pulling device (rod pusher/puller) is apparently abutted against the reaction plate. That is, there is no cable pulling frame in Vermeer that is disposed between the cable pulling device and the reaction plate. Fisk '542 does not appear to include a reaction plate. It teaches a cable pulling device that is mounted on top of a cable pulling frame 40, however no reaction plate is taught. In the Office Action, paragraphs 8 and 9, it is stated that claim 26 is anticipated by Fisk, stating:

"wherein said cable pulling device engagement means includes a reaction plate having an enlarged surface for disbursing a reaction force against a cable pulling force generated by said cable pulling device; wherein said cable pulling frame is mountable to said reaction plate;"

Applicant respectfully traverses this ground of rejection and asserts that Fisk '542 does not teach such a reaction plate, nor the mounting of a cable pulling device frame to it. Applicant therefore

respectfully submits that claim 26 recites limitations that are neither taught by nor obvious from the cited prior art.

Claim 27 -- Claim 27 is dependent from claim 26 and amended to include the limitation that the cable pulling device includes two pairs of collets, that function to engage the cable on the pulling stroke and to engage the cable on the recovery stroke, as has been discussed hereabove. The non-obviousness of these limitations has been discussed hereabove with regard to amended claim 2 and Applicant relies on those remarks to assert that claim 27 recites allowable subject matter.

Claim 28 -- Claim 28 is dependent from claim 27 and recites the limitations that the cable pulling frame members are disposed to provide a sideways mountable cable insertion path. The non-obviousness of these limitations has been argued hereabove with regard to claim 7 and claims 20, 21 and 22. Applicant relies on those remarks in asserting that claim 28 recites allowable subject matter.

Claim 29 -- Claim 29 is dependent from claim 28 and recites further limitations with regard to the mole. Specifically, claim 29 includes the additional limitation that the smooth tapered body portion of the mole initially contacts, fractures and expands the pipe. As argued hereabove with regard to claims 11 and 25, Applicant asserts that claim 29 recites limitations that are neither taught by nor obvious from the prior art. Additionally, Applicant asserts that claim 29 is allowable as depending from allowable base claims.

Claim 30 -- Claim 30 is an independent claim that is directed to the novel features of Applicant's mole. Specifically, claim 30 has been amended to include the further limitation that the tapered body portion of the mole initially contacts, fractures and expands the pipe. Prior art moles include fins or other devices to either make initial contact with the pipe, or to fracture the pipe, or to expand the pipe. Applicant respectfully asserts that these limitations directed to Applicant's mole, as depicted in Figs. 19, 20 and 21, are neither taught by nor obvious from the cited prior art.

Claim 31 -- Claim 31 is dependent from claim 30 and recites further limitations with regard to the blade portion of Applicant's mole, and such a blade and mole are best depicted in Figs. 22 and 23. As depicted therein, the blade includes a relatively thin portion that is disposed within the tapered body of the mole and an expanded portion that projects from the tapered body portion of the mole. Applicant submits that the prior art neither teaches nor renders obvious such

a blade shape within such a mole, and therefore claim 31 recites allowable subject matter. Additionally, Applicant asserts that claim 31 is allowable as dependent from an allowable base claim.

Claim 32 -- Claim 32 is dependent from claim 30 and recites the further limitation that the rearward edge of the blade is formed with an angle of approximately 80° to reside within a blade slot having a corresponding angle. Applicant respectfully submits that the prior art neither teaches nor renders obvious such a blade holding configuration, and that claim 32 therefore contains allowable subject matter. Additionally, Applicant asserts that claim 32 is allowable in that it depends from an allowable base claim.

Claim 33 -- Claim 33 is dependent from claim 30 and recites limitations with regard to the engagement of the cable with the mole. Specifically, that a threaded mole engagement fixture is engaged to an end of the cable, and that the engagement fixture is threadably engageable with a threaded bore within the mole. Such a structure is depicted in Fig. 24. Applicant respectfully submits that the prior art does not teach such a cable engagement mechanism for a mole, and that therefore claim 33 recites allowable subject matter. Additionally, Applicant asserts that claim 33 is allowable as being dependent from an allowable base claim.

Claim 34 -- Claim 34 is dependent from claim 33 and recites the further limitation that the fixture includes a hex bolt portion for tightening the cable with the mole; such a limitation is depicted in Fig. 24. Applicant submits that this limitation is neither taught by nor obvious from the recited prior art, and that claim 34 therefore recites allowable subject matter. Additionally, Applicant asserts that claim 34 is allowable as a dependent claim which depends from an allowable base claim.

Claim 35 -- Claim 35 is dependent from claim 30 and includes limitations with regard to the engagement of the replacement pipe at the rearward end of the mole. In particular, as depicted in Fig. 25 and 26, a replacement pipe engagement sleeve 1220 includes an internal radially projecting wall portion 1228 having a bore through which a threaded rearwardly projecting mole portion 1216 projects. A threaded nut 1240 is threadably engaged upon the threaded mole portion 1216 to hold the sleeve member 1220 in engagement with the mole. The replacement pipe 60 is thermopressure bonded to the rearward end of the sleeve 1220. In the Office Action it is stated in paragraphs 8 and 9 that this structure is anticipated by Fisk '542, stating:

“further including a replacement pipe engagement sleeve member (22) for the engagement of said replacement pipe with said mole, said sleeve member being formed for the engagement of said replacement pipe with cylindrical sidewalls and an internal radially projecting wall portion having a bore formed therethrough; and wherein said mole is formed with a rearwardly projecting threaded portion that projects through said bore such that said sleeve may be secured to said mole.”

Applicant respectfully traverses this ground of rejection and asserts that Fisk ‘542 neither teaches nor renders obvious the replacement pipe engagement sleeve as set forth in claim 35. Applicant therefore respectfully submits that claim 35 recites allowable subject matter, and additionally that claim 35 is allowable as it depends from an allowable base claim.

Claim 36 -- Claim 36 is a non-amended independent claim that is directed to the cable pulling device engagement frame of the present invention. Claim 36 includes limitations directed to the annulus member having a cable passage bore and a cable insertion slot for the sideways insertion of the cable within the annulus member, as well as limitations directed to the reaction plate. This basic cable pulling device engagement frame is depicted in Figs. 16, 17 and 18. In the Office Action it is stated in paragraphs 10 and 11 that claim 36 is obvious from Fisk ‘542, stating:

“With respect to claims 36 through 39, a duplication of parts is not considered be of patentable merit. As such, Applicants’ claimed invention is anticipated by the device shown by Fisk et al. ‘542 and in view of the above statements of obviousness.”

Responsive thereto, Applicant asserts that Fisk ‘542 teaches neither an annulus member nor a reaction plate, and that it therefore cannot be obvious from the teachings of Fisk ‘542 to combine an annulus member and a reaction plate to form a cable pulling device engagement frame, as depicted in Figs. 16-18 of the Application. Applicant therefore respectfully submits that claim 36 recites subject matter that is not obvious from the teachings of Fisk ‘542, nor other art known to Applicant, and that claim 36 therefore recites allowable subject matter.

Claim 37 -- Claim 37 is dependent from claim 36 and includes the further limitation that the frame includes two cable pulling device engagement devices, such that two cable pulling devices can operationally function with the frame to pull two cables simultaneously. This device is depicted in Figs. 30-33. There is no teaching in the prior art with regard to the use of two cable pulling device engagement devices within a single frame. Moreover, there is no teaching in the prior art with regard to any use of two cable pulling devices within a trenchless

replacement system. Applicant therefore respectfully submits that claim 36 recites subject matter that is not obvious from the cited prior art, such that it contains allowable subject matter. Additionally, Applicant asserts that claim 37 is allowable as being dependent from an allowable base claim.

Claim 38 -- Claim 38 is dependent from claim 37 and recites the further limitation that two annulus members are utilized to engage the two cable pulling devices. The non-obviousness of Applicant's annulus members as utilized to engage a cable pulling device has been argued hereabove. Applicant relies on those remarks, and the dependency of claim 38 from allowable base claims assert that claim 38 is allowable.

Claim 39 -- Claim 39 is dependent from claim 38 and recites the angular disposition of the two annulus members relative to each other, as is depicted in Figs. 30-33. Applicant relies on its remarks set forth hereabove with regard to the use of such annulus members as cable pulling device engagement members, and Applicant further notes that claim 39 is dependent from claim 38. Applicant asserts that claim 39 is therefore allowable.

Claim 40 is an independent method claim which recites Applicant's method for the trenchless replacement of pipe. Claim 40 has been amended to include the further limitation that the reaction plate is installed after the cable is disposed through the pipe, and Applicant asserts that claim 40 recites subject matter that is neither taught by nor obvious from the cited prior art. In the Office Action it is indicated in paragraphs 8 and 9 that claims 40 through 47 are anticipated by Fisk '542, stating:

"With respect to claims 40 through 47, the method steps recited therein are considered to be anticipated by installation and use of the device disclosed by Fisk et al. '542."

Applicant respectfully traverses this ground of rejection with regard to amended claim 40. Specifically, Applicant asserts that Fisk '542 does not teach the use of a reaction plate. However, in the Vermeer device of Exhibit CD, a reaction plate is depicted. However, a close examination of Exhibit CD reveals that the reaction plate includes a circular opening for the passage of the pipes of the pipe pusher/puller device. Vermeer does not teach in Exhibit CD the use of a long cable, but rather segmented pipes, and where such segmented pipes are utilized, they can pass through the reaction plate opening. Conversely, where a cable is used, if the reaction plate has an enclosed opening (a hole), the cable must pass through the reaction plate

before the cable is inserted into the pipe. Applicant's reaction plate, as depicted in Fig. 8, includes a U-shaped opening which allows the reaction plate to be installed at the second end, after the cable is disposed through the pipe. Such a reaction plate design is neither taught by nor obvious from the prior art teachings, whereby Applicant asserts that claim 40 recites allowable subject matter.

Claim 41 -- Claim 41 is dependent from claim 40, and Applicant relies on the allowability of claim 40 in asserting that dependent claim 41 also recites allowable subject matter.

Claim 42 -- Claim 42 is dependent from claim 41 and includes the further limitations of a cable pulling device engagement frame being installed between the reaction plate and the cable pulling device after the cable is disposed through the pipe. This limitation basically relies on the sideways insertion of the frame upon the cable, such that the frame can be installed upon the cable at the cable is disposed through the pipe. In devices such as Fisk '542, the frame is inserted within the hole at the second end prior to the insertion of the cable through the pipe, or the frame would rest on top of the cable. Specifically, as depicted in Exhibit CC, the frame of the cable pusher/puller of Fisk '542 is not sideways mountable upon the cable, such that the cable must be passed through the end opening in the rod pusher/puller frame and then into the pipe. Applicant therefore respectfully submits that claim 42 recites limitations that are neither taught by nor obvious from the prior art, whereby claim 42 recites allowable subject matter. Additionally, Applicant further asserts that claim 42 is allowable as being dependent upon allowable base claims.

Claim 43 is dependent from claim 42 and further includes a pulley within the frame. Applicant notes that claim 43 is dependent from claim 42, and Applicant asserts that claim 43 is allowable as depending from an allowable base claim.

Claim 44 is amended to be dependent from claim 42 and includes the further limitation that the cable pulling device is disposed within the hole. Applicant notes that Fisk '542 includes a cable mounting frame including a pulley that is disposed within the hole, however the cable pulling device is mounted on top of the frame and outside of the hole. Applicant further notes that the Vermeer prior art of Exhibit CD includes a rod pusher/puller device that is mounted within the hole, however Vermeer does not include a mounting frame that includes the pulley set forth in claim 43. The basic novelty of this claim is a result of the unique, lightweight and

modular nature of Applicant's invention, as depicted in Fig. 1, particularly, that it includes a lightweight frame and a lightweight cable pulling device, such that both of these devices are installable within the hole. Applicant therefore respectfully submits that the prior art neither teaches nor renders obvious the limitations set forth in claim 44, such that claim 44 recites allowable subject matter. Applicant further notes that claim 44 is a dependent claim, and Applicant asserts that claim 44 is also allowable as being dependent from an allowable base claim.

Claim 45 -- Claim 45 is dependent from claim 43 and includes the limitation that both the frame and the cable pulling device are disposed within the hole. Applicant relies on its remarks set forth hereabove with regard to claim 44, and Applicant further asserts that claim 45 is allowable as being dependent from an allowable base claim.

Claim 46 -- Claim 46 is amended to be dependent from claim 40, and it includes the further limitations regarding the use of two pairs of collets within the cable pulling device to engage the cable on a pulling stroke and to engage the cable on a recovery stroke. Applicant relies on its remarks set forth hereabove with regard to the inclusion of two pairs of cable engaging collets as set forth in claims 2 and 27 above. Applicant therefore asserts that claim 46 recites allowable subject matter, and Applicant further notes that claim 46 is allowable as being dependent from an allowable base claim.

Claim 47 -- Claim 47 is dependent from claim 40 and it recites the further limitation that the cable pulling device is a post tensioning ram (PTR). Applicant relies on its remarks set forth hereabove with regard to the allowability of claim 1, and Applicant further asserts that claim 47 is allowable as a dependent claim which depends from an allowable base claim.

Claim 48 -- Original claim 48 has been renumbered to claim 47, as discussed in response to paragraph 4 of the Office Action (Applicant's inadvertent omission of a claim numbered 9, resulting in the renumbering of claims originally numbered 10-48 to 9-47).

Claim 49 -- Applicant has added a new claim 49 that is directed to the novel features of the cable pulling device depicted in Figs. 28 and 29. Specifically, Applicant's cable pulling device includes two pairs of collets, wherein one pair is engaged to a first structural portion of the cable pulling device, and a second pair of collets is engaged to a second structural frame portion of the cable pulling device. Applicant respectfully submits that there is no prior art which teaches or renders obvious the use of two pairs of cable engaging collets within a cable

pulling device, such as the prior art post tensioning ram (PTR) as depicted in Fig. 9, and as depicted in Exhibit CE herewith. Applicant therefore respectfully submits that new claim 49 recites allowable subject matter.

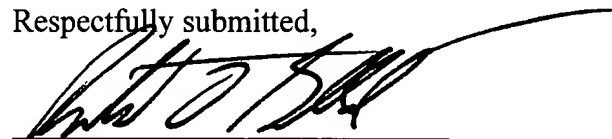
Claim 50 -- Claim 50 is dependent from claim 49 and recites further limitations with regard to the cable pulling device, specifically that the first frame portion and second frame portion of the cable pulling device operate in a reciprocal manner, and that the first pair of collets engage the cable when the two structural frame portions are separating, and the second pair of collets engage the cable when the two structural frame portions are coming together. Applicant respectfully submits that there is no prior art that teaches or renders obvious this cable pulling device limitation. Applicant also asserts that claim 50 is allowable as being dependent from an allowable base claim (claim 49).

Having responded to all of the paragraphs of the Office Action, and having amended the claims accordingly, Applicant submits that the Application now in condition for allowance. Applicant therefore respectfully requests that a Notice of Allowability be forthcoming at the Examiner's earliest opportunity. Should the Examiner have any questions or comments with regard to this Amendment, a telephonic conference at the number set forth below is respectfully requested.

Dated: January 4, 2001

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Respectfully submitted,


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I hereby certify that this correspondence with all attachments is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Box Fee Amendment, Assistant Commissioner for Patents, Washington, D.C. 20231 on January 4, 2001 by Patricia Beilmann.

